Chapter 8 Test Honors Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Magnetism Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:** Select the **best** answer for each question. (2pts each)

1. An electric motor converts\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. mechanical, electrical
   2. electrical, mechanical
   3. rotational, mechanical
   4. magnets, electricity
2. An electromagnet is unique in that it
   1. is easy to make
   2. can be very strong
   3. can be turned on and off easily
   4. B and C
   5. All of the above
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the cause of all magnetism.
   1. Electrons
   2. Protons
   3. Neutrons
   4. Invisible forces
4. Electric motors and electric generators (for DC current) are\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. very similar.
   2. very different.
   3. create the same output, but are constructed very differently.
   4. create different outputs, but are constructed very similar.

**Directions:** For each statement decide if it is true or false, write the **entire word** (true, false) in the space to the left. (1 pt each)

1. All metals are magnetic. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. All magnetic materials have fields around them. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Generators convert mechanical energy to electrical energy. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Electric motors are complicated devices with many moving parts. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Both electromagnets and permanent magnets are in motors. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Magnets are found in computers, credit cards and TV’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Directions:** Answer the questions below as best you can. Use complete sentences and/or draw labeled diagrams.

1. Draw the field lines for the following bar magnet. Be sure to include the direction. (3 points)
2. Draw the field lines for the following interaction of magnets. Be sure to include the direction. (3 points)
3. Only Iron, Nickel and Cobalt are considered to be magnetic, yet all materials **are a little** magnetic, most too little to be noticed by normal means. Please explain why I can say this. Think of what actually causes the magnetism inside of an object (hint: domains) (3 pts)
4. In order for an electric motor to work, the rotor must continue to spin. This is accomplished by changing the poles of the electromagnet at the correct time. The commutator does this, please explain how it works. (4 pts)
5. Electric motors and generators have many things in common, and a few key differences. State 2 differences and 2 similarities between the two below. You may create a chart or graphic to help you. (4 pts)
6. Use what you know about electricity and domains to explain how and why an electromagnet works. Be sure to talk about electric flow and domains in your answer. (Hint: do not just say the electricity makes it a magnet, tell me ***why.***) (4 pts)